

Mindspaces

CONCEPT

Vision

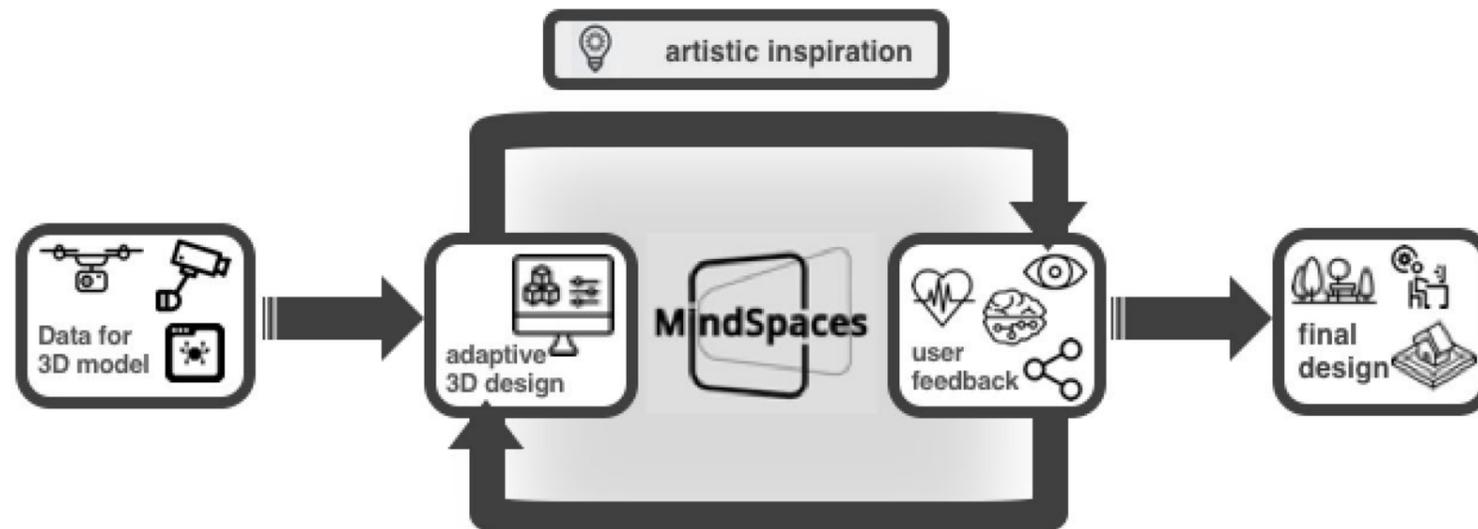
MindSpaces will bring together artists, creatives and technology experts to produce AR/VR installations representing emotionally and functionally adaptive designs of outdoors and indoors spaces.

Context

The design of space, on architectural and urban scales has been shown to significantly affect the emotional, cognitive wellbeing of individuals, and to influence the functionality and effectiveness of indoors and outdoors spaces in manners that have often been overlooked in the past.

MindSpaces will bring together artists, creatives and technology experts to produce AR/VR installations representing emotionally and functionally adaptive designs of outdoors and indoors space. Artists will incorporate these responses into “living” installations, adapting them online to elicit positive emotional and behavioral feedback. This proposal is at the vanguard of a new wave of designers, architects and engineers that affirm the necessity of an interdisciplinary approach that integrates novel technologies to inform design. By integrating approaches from neuroscience, physiology and psychology with architectural research, sociological and ethnographic methodologies, human experience can be directly linked to design by correlating specific measures of the built environment (input) with quantified measures of the brain’s and body’s responses (neural, physiological and psychological responses), as well as sociological, behavioral and economic outcomes (output). Using neuroscientific tools objective measurements can now be used along with traditional subjective evaluations.

PROJECT ARCHITECTURE



Overall Goal

MindSpaces is a STARTS lighthouse project that aims to create the tools and develop the solutions for adaptive and inclusive spaces that dynamically adapt to emotional, aesthetical and societal responses of end users, creating functionally and emotionally appealing architectural design.

Original 3D models of spaces to be developed by architects and artists will be used as a basis to propose innovative, art-inspired outdoors environments for a city, indoors workspace and house re-design. The design ideas will be integrated artistically in VR (Virtual Reality) environments, which will be modified in real time in response to EEG (Electroencephalography), physiological and environmental measurements of end users. This will lead to dynamic designs that immediately adapt to users’ emotional and functional needs.

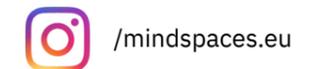
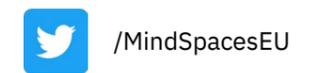
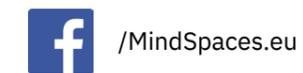
S + T + ARTS



LIGHTHOUSE MINDSPACES

Project website: www.mindspaces.eu

Partners



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OBJECTIVES AND ACTIVITIES

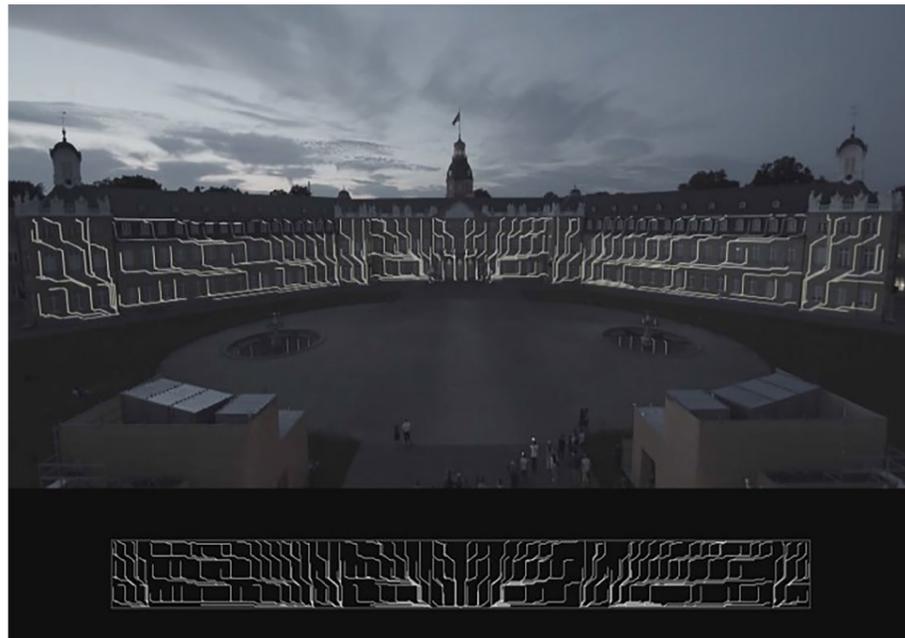
Objectives

Artists and technology experts will closely collaborate under a novel working model scheme to propose innovative designs to address societal challenges faced by cities as they expand, and the evolving needs in functionality and emotional resonance of modern day workplace and housing interiors.

- Bring together artists, creatives and technology experts in the realm of techno science art
- Create tools and develop solutions for adaptive and inclusive spaces
- Dynamic adaptation to emotional, aesthetical and societal responses of end users
- Creating functionally and emotionally appealing architectural design

Activities

- Emotional Cognitive Sensing
- Emotional response analysis from EEG signals
- Emotional response analysis from physio signals
- Visual response assessment
- 3D models extraction
- 3D model extraction from archival visual material
- 3D reconstruction of outdoors environments
- 3D reconstruction of interior environments
- Design, emotion content extraction and production from multimodal data
- Aesthetics and style (design) content extraction from visual data
- Extraction and production of content relevant to design, emotion, from text data
- Semantic integration of emotion and environment(sensor) inputs
- Data representation integration and reasoning
- Adaptive 3D-models based on semantic reasoning



USE CASE 1

Outdoors urban environment

Users: City councils and municipalities, architecture offices architecture, academic units, VR/AR companies

Scenario: Interventions in City de Hospitalet

Application: Designing of improved, attractive city spaces

USE CASE 2

Inspiring workplaces

Users: Big companies, architecture offices

Scenario: Designing for Smart workplaces

Application: The designing of friendly, emotionally sensitive and functional interior workspaces and interior objects.

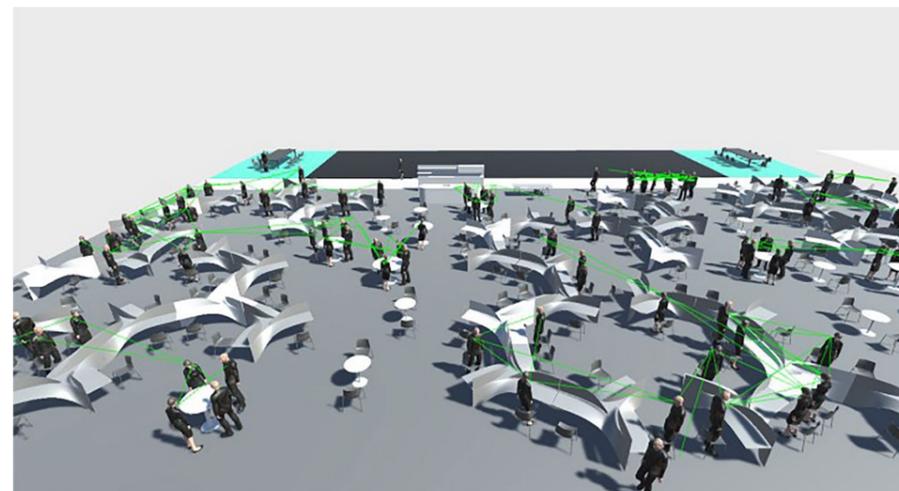
USE CASE 3

Emotionally-sensitive functional interior design

Users: Associations for the elderly, nursing homes, architecture offices, people that want to refurbish their dwellings

Scenario: Seniors' home re-design

Application: The designing of functional home interiors



IMPACT AND RESULTS

Expected Impact

MindSpaces will achieve the following impacts:

- The demonstration of value added to industry and society in having artists contribute to the development of radically new products, services and processes
- Signaling effect for future uptake of art-driven solutions to concrete industrial and societal challenges and art driven user-centered products and services
- Efficient working models how art-technology collaboration can contribute to innovative processes in research, industry and society
- Burgeoning STARTS ecosystem involving industry, technology, research, end users, societal stakeholders, and the Art world that reconciles and unites the goals and thinking of industry and technology with that of the Art world

Expected Results

The final outcome of MindSpaces includes:

- Introduce collective mind design
- VR and EEG can be leveraged to use sentiments in human interaction in order to build better urban spaces
- Provide enhanced 3D models of outdoors and interior spaces to industries that rely on them (i.e. architects)
- Help architects build more functional and appealing interior and exterior spaces at architectural and urban scale
- Improved architecture design tools that integrate feedback on emotional and functional aspects of design propositions
- The platform will allow unified access and consumption of heterogeneous, textual and visual content

